

PATENT COOPERATION TREATY

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NOTIFICATION OF ELECTION

(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:

Commissioner
US Department of Commerce
United States Patent and Trademark
Office, PCT
2011 South Clark Place Room
CP2/5C24
Arlington, VA 22202
ETATS-UNIS D'AMERIQUE

in its capacity as elected Office

Date of mailing (day/month/year) 06 November 2000 (06.11.00)	
International application No. PCT/EP00/02473	Applicant's or agent's file reference ACO 2772 WO
International filing date (day/month/year) 17 March 2000 (17.03.00)	Priority date (day/month/year) 18 March 1999 (18.03.99)
Applicant DAVIES, Gerald, Howard et al	

1. The designated Office is hereby notified of its election made:

☒ in the demand filed with the International Preliminary Examining Authority on:

04 October 2000 (04.10.00)

☐ in a notice effecting later election filed with the International Bureau on:

2. The election ☒ was
☐ was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland

Facsimile No.: (41-22) 740.14.35

Authorized officer

Olivia TEFY

Telephone No.: (41-22) 338.83.38

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INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference ACO 2772 W0	FOR FURTHER ACTION see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.	
International application No. PCT/EP 00/ 02473	International filing date (day/month/year) 17/03/2000	(Earliest) Priority Date (day/month/year) 18/03/1999
Applicant INTERNATIONAL COATINGS LTD		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 3 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

- a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

- b. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international search was carried out on the basis of the sequence listing :

☐ contained in the international application in written form.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☐ furnished subsequently to this Authority in computer readable form.

☐ the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

☐ the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2. ☐ **Certain claims were found unsearchable** (See Box I).

3. ☐ **Unity of invention is lacking** (see Box II).

4. With regard to the **title**,

☒ the text is approved as submitted by the applicant.

☐ the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,

☒ the text is approved as submitted by the applicant.

☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the **drawings** to be published with the abstract is Figure No.

☐ as suggested by the applicant.

☐ because the applicant failed to suggest a figure.

☐ because this figure better characterizes the invention.

☐ None of the figures.

INTERNATIONAL SEARCH REPORT

International Application No

PCT/EP 00/02473

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 C09D1/02

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 C09D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 3 977 888 A (SANO RYUICHI ET AL) 31 August 1976 (1976-08-31) column 4, line 32-50 column 5, line 13-47 ---	1, 2, 5, 10
A	US 4 277 284 A (GINSBERG THOMAS ET AL) 7 July 1981 (1981-07-07) column 2, line 8 -column 4, line 25 ---	1, 4
A	WO 98 58028 A (AMERON INT CORP ;MONTES ERNESTO (US)) 23 December 1998 (1998-12-23) page 1, line 9 page 3, paragraphs 25-30 page 4, line 30 -page 5, line 10 page 7, line 18-31 page 8, line 10-16 --- -/--	1



Further documents are listed in the continuation of box C.



Patent family members are listed in annex.

° Special categories of cited documents :

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier document but published on or after the international filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search

9 June 2000

Date of mailing of the international search report

27/06/2000

Name and mailing address of the ISA

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Authorized officer

Miller, A

INTERNATIONAL SEARCH REPORT

International Application No
PCT/EP 00/02473

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
<p>A</p> <p>A</p>	<p>WO 88 06177 A (LABOFINA SA) 25 August 1988 (1988-08-25) cited in the application & US 4 888 056 A (VAN DER KOLK) 19 December 1989 (1989-12-19) cited in the application -----</p>	

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/EP 00/02473

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 3977888	A	31-08-1976	JP 49047249 B DE 2060155 A FR 2072981 A GB 1337122 A	14-12-1974 16-06-1971 24-09-1971 14-11-1973
US 4277284	A	07-07-1981	CA 1110048 A DE 2821016 A DK 209778 A, B, FR 2390482 A GB 1593217 A IT 1110476 B NL 7805220 A, B, NO 781668 A, B, SE 7805522 A	06-10-1981 16-11-1978 14-11-1978 08-12-1978 15-07-1981 23-12-1985 15-11-1978 14-11-1978 14-11-1978
WO 9858028	A	23-12-1998	US 5888280 A AU 8074198 A	30-03-1999 04-01-1999
WO 8806177	A	25-08-1988	AT 100851 T AU 620542 B AU 1397788 A DE 3887509 D DE 3887509 T EP 0346385 A GB 2243155 A, B JP 2740222 B KR 9700997 B NL 8820139 T US 4888056 A	15-02-1994 20-02-1992 14-09-1988 10-03-1994 01-06-1994 20-12-1989 23-10-1991 15-04-1998 25-01-1997 01-12-1989 19-12-1989

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INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference ACO 2772 WO	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/EP00/02473	International filing date (day/month/year) 17/03/2000	Priority date (day/month/year) 18/03/1999
International Patent Classification (IPC) or national classification and IPC C09D1/02		
Applicant INTERNATIONAL COATINGS LIMITED et al.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.



2. This REPORT consists of a total of 5 sheets, including this cover sheet.

- ☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 2 sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☒ Certain defects in the international application
- VIII ☒ Certain observations on the international application

Date of submission of the demand 04/10/2000	Date of completion of this report 28.05.2001
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized officer Wirth, M Telephone No. +49 89 2399 8595 

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/EP00/02473

I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

Description, pages:

1-27 as originally filed

Claims, No.:

1-8 with telefax of 20/02/2001

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☐ the claims, Nos.:
- ☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/EP00/02473

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	1-9
	No:	Claims	
Inventive step (IS)	Yes:	Claims	1-9
	No:	Claims	
Industrial applicability (IA)	Yes:	Claims	1-9
	No:	Claims	

2. Citations and explanations see separate sheet

VII. Certain defects in the international application

The following defects in the form or contents of the international application have been noted:
see separate sheet

VIII. Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:
see separate sheet

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/EP00/02473

Item V

Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Reference is made to the following documents:

D1: US-A-3 977 888
D2: US-A-4 277 284
D3: WO 98 58028 A
D4: WO 88 06177 A
D5: GB 1485169 A
D6: EP 0638379 A
D7: EP 0663620 A

2. Novelty and inventive step (Art. 33(2) and (3) PCT).

D3 and D5 disclose coating compositions comprising silica, a silicate and zinc. These two documents do not disclose the use of a $\text{SiO}_2/\text{M}_2\text{O}$ mole ratio of the binder of at least 6:1, and do not disclose the use of silica or silicate particles with an average size smaller than 10 nm either.

The silica sol particle size has an effect on the build up of mechanical properties in particular on the double rub resistance. (see example 8, p 4, l 17-20)

A $\text{SiO}_2/\text{M}_2\text{O}$ mole ratio of at least 6:1 is important for the resistance to osmotic blistering of the coating (see p 4, l 22-23).

This was not suggested in any of the available prior art documents.

3. The compositions claimed can be used for coating a metal substrate.

Item VII

Certain defects in the international application

1. D5 is not acknowledged in the description as required by Rule 5.1.a)ii) PCT.

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/EP00/02473

Item VIII

Certain observations on the international application

1. Art 6 PCT: Clarity

a) It is clear from the description (p 5, l 10) that the $\text{SiO}_2/\text{M}_2\text{O}$ ratio relates to the binder as a whole. In claim 1 however, the wording is such that the ratio relates to the silicate or silica only.

b) The compositions of example 7 do not contain any zinc so that they do not fall under the scope of the present claims. Example 7 is therefore a comparative example.

Claims

1. A composition for coating a metal substrate which is intended to be fabricated and overcoated, said composition comprising a silica or silicate binder and zinc powder and/or a zinc alloy, characterized in that the binder comprises an aqueous silica sol or alkali metal silicate having a $\text{SiO}_2/\text{M}_2\text{O}$ mole ratio of at least 6:1, where M represents total alkali metal and ammonium ions, and wherein the silica or silicate particles have an average size equal to or smaller than 10 nm.
2. A coating composition according to claim 1, characterized in that the binder is a silica sol of $\text{SiO}_2/\text{M}_2\text{O}$ mole ratio at least 25:1.
3. A coating composition according to claim 1 or claim 2, characterized in that the binder comprises an aqueous solution of an alkali metal or ammonium silicate stabilized by a siliconate substituted by at least one anionic group of lower pKa than silicic acid, having a pH of 7 to 10.5 prepared by lowering the pH of a solution of silicate and siliconate by ion exchange.
4. A coating composition according to any of claims 1 to 3, characterized in that the silica particles have an average size in the range 3 nm to 10 nm.
5. A coating composition according to any of claims 1 to 4, characterized in that the binder further comprises a silane coupling agent.
6. A coating composition according to any of claims 1 to 5, characterized in that the binder further comprises an organic resin.
7. A coating composition according to any of claims 1 to 6, characterized in that it is a water-based shop primer.
8. Water-based shop primer for the coating of steel substrates which are intended to be fabricated and overcoated, said composition having a solid content of 20 - 40 % by volume, comprising:
 - an aqueous silica sol or alkali metal silicate binder having a $\text{SiO}_2/\text{M}_2\text{O}$ mole ratio of at least 6:1, where M represents total alkali metal and ammonium

ions, and wherein the silica or silicate particles have an average size equal to or smaller than 10 nm,

- 10 - 90 % by volume of the coating on a dry film basis of zinc powder and/or a zinc alloy having a mean particle size in the range 2 to 12 μm ,
- 5 - 0 - 35 % by weight, based on silica or silicate, of an organic resin,
- 0 - 30 % by weight, based on silica or silicate, of a silane coupling agent,
- optionally non-zinc pigment(s) having a mean particle size below 3 μm , and
- optionally a pot-life extender.

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International Bureau

INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ⁷ : C09D 1/02	A1	(11) International Publication Number: WO 00/55260 (43) International Publication Date: 21 September 2000 (21.09.00)
(21) International Application Number: PCT/EP00/02473 (22) International Filing Date: 17 March 2000 (17.03.00) (30) Priority Data: 99302127.8 18 March 1999 (18.03.99) EP (71) Applicant (for all designated States except US): INTERNATIONAL COATINGS LTD. [GB/GB]; Oriol House, 16 Connaught Place, London W2 2ZB (GB). (72) Inventors; and (75) Inventors/Applicants (for US only): DAVIES, Gerald, Howard [GB/GB]; 11 Castleton Grove, Jesmond, Newcastle-upon-Tyne NE2 2HD (GB). JACKSON, Paul, Anthony [GB/GB]; 38 Hazelmoor, Hebburn Village, Hebburn, Tyne & Wear (GB). MCCORMACK, Peter, Joseph [GB/GB]; 5 Meldon Terrace, Heaton, Newcastle-upon-Tyne NE6 5XP (GB). (74) Agent: SCHALKWIJK, Pieter, Cornelis; Akzo Nobel N.V., Intellectual Property Dept. (Dept. AIP), P.O. Box 9300, NL-6800 SB Arnhem (NL).		(81) Designated States: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG). Published <i>With international search report.</i>
(54) Title: COATING COMPOSITION FOR METAL SUBSTRATES		
(57) Abstract <p>The present invention relates to a composition for coating a metal substrate which is intended to be fabricated and overcoated, and wherein the binder comprises an aqueous silica sol or alkali metal silicate having a SiO₂/M₂O mole ratio of at least 6:1, where M represents total alkali metal and ammonium ions, and wherein the silica particles have an average size equal to or smaller than 10 nm. Very good results are obtained if the dried coating is post-treated with a film-strengthening solution.</p>		

FOR THE PURPOSES OF INFORMATION ONLY

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AL	Albania	ES	Spain	LS	Lesotho	SI	Slovenia
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EE	Estonia	LR	Liberia	SG	Singapore		

INTERNATIONAL SEARCH REPORT

International Application No.

PCT/EP 00/02473

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 C09D1/02

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B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 C09D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

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Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 3 977 888 A (SANO RYUICHI ET AL) 31 August 1976 (1976-08-31) column 4, line 32-50 column 5, line 13-47 ---	1,2,5,10
A	US 4 277 284 A (GINSBERG THOMAS ET AL) 7 July 1981 (1981-07-07) column 2, line 8 -column 4, line 25 ---	1,4
A	WO 98 58028 A (AMERON INT CORP ;MONTES ERNESTO (US)) 23 December 1998 (1998-12-23) page 1, line 9 page 3, paragraphs 25-30 page 4, line 30 -page 5, line 10 page 7, line 18-31 page 8, line 10-16 --- -/-	1



Further documents are listed in the continuation of box C.



Patent family members are listed in annex.

* Special categories of cited documents :

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"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

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"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search

9 June 2000

Date of mailing of the international search report

27/06/2000

Name and mailing address of the ISA

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Miller, A

INTERNATIONAL SEARCH REPORT

International Application No

PCT/EP 00/02473

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 88 06177 A (LABOFINA SA) 25 August 1988 (1988-08-25) cited in the application	
A	& US 4 888 056 A (VAN DER KOLK) 19 December 1989 (1989-12-19) cited in the application -----	

INTERNATIONAL ARCH REPORT

information on patent family members

International Application No

PCT/EP 00/02473

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 3977888	A	31-08-1976	JP 49047249 B	14-12-1974
			DE 2060155 A	16-06-1971
			FR 2072981 A	24-09-1971
			GB 1337122 A	14-11-1973
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			DE 2821016 A	16-11-1978
			DK 209778 A,B,	14-11-1978
			FR 2390482 A	08-12-1978
			GB 1593217 A	15-07-1981
			IT 1110476 B	23-12-1985
			NL 7805220 A,B,	15-11-1978
			NO 781668 A,B,	14-11-1978
			SE 7805522 A	14-11-1978
WO 9858028	A	23-12-1998	US 5888280 A	30-03-1999
			AU 8074198 A	04-01-1999
WO 8806177	A	25-08-1988	AT 100851 T	15-02-1994
			AU 620542 B	20-02-1992
			AU 1397788 A	14-09-1988
			DE 3887509 D	10-03-1994
			DE 3887509 T	01-06-1994
			EP 0346385 A	20-12-1989
			GB 2243155 A,B	23-10-1991
			JP 2740222 B	15-04-1998
			KR 9700997 B	25-01-1997
			NL 8820139 T	01-12-1989
			US 4888056 A	19-12-1989